IN THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A method comprising:

generating a phase compensation estimate by recursively filtering an observation vector formed by weighted pilot subcarriers of ~~based on channel conditions for~~ a data symbol of an orthogonal frequency division multiplexed (OFDM) packet ~~from pilot subcarriers within the data symbol~~; and

applying the phase compensation estimate to channel equalized subcarriers of the data symbol in the frequency domain after performance of a Fourier transform on the data symbol,

wherein the pilot subcarriers are weighted to help maximize a signal to noise ratio (SNR) of the observation vector based on fading gains.

2. (Currently Amended) The method of claim 1 wherein the phase compensation estimate is applied after channel equalization to the channel equalized subcarriers of the data symbol in the frequency domain prior to demapping the subcarriers,

wherein channel estimate used to channel equalize the subcarriers are determined from long training symbols of the OFDM packet.

3. (Currently Amended) The method of claim 1 further comprising repeating generating and applying for subsequent data symbols of the OFDM packet, ~~and~~

wherein the data symbol is comprised of a plurality of symbol modulated subcarriers, at least some of the symbol-modulated subcarriers of the plurality being the pilot subcarriers, and

~~and~~ wherein generating the phase compensation estimate comprises:

weighting the pilot subcarriers based on fading gains for the pilot subcarriers;

combining the weighted pilot subcarriers in an observation vector former to generate the ~~an~~ observation vector; and

recursively filtering the observation vector using a channel estimate to generate the phase compensation estimate.

4. (Previously Presented) The method of claim 3 wherein repeating generating the phase compensation estimate comprises:

combining the pilot subcarriers of a present data symbol to generate an observation vector for the present data symbol; and

performing recursive filtering on the observation vector for the present data symbol using the channel estimate to generate the phase compensation estimate for the present data symbol.

5. (Original) The method of claim 3 wherein repeating generating the phase compensation estimates comprises:

combining the pilot subcarriers of a present data symbol to generate an observation vector for the present data symbol; and

performing recursive filtering on the observation vector for the present data symbol to generate a frequency offset estimate and the phase compensation estimates for a next data symbol.

6. (Previously Presented) The method of claim 3 wherein recursively filtering comprises performing extended Kalman filtering on the observation vector using the channel estimate, an additive noise power estimate, a signal to noise ratio (SNR) estimate, a priori information about a dynamic model of phase, and a phase noise power value from a phase noise spectrum of transceiver oscillators.

7. (Original) The method of claim 5 wherein the channel estimate is generated from a long training symbol of the OFDM packet, and wherein the additive noise power estimate and the SNR estimate are generated from short training symbols of the OFDM packet.

8. (Original) The method of claim 7 wherein the OFDM packet is comprised of a plurality of sequential symbol modulated subcarriers, beginning with the short training symbols modulated on a portion of the subcarriers followed by the long training symbol and a plurality of data symbols, the data symbols containing at least one known pilot subcarrier,

and wherein the channel estimate, the additive noise power estimate, the SNR estimate, and the phase noise power value are used substantially for data symbols of the OFDM packet.

9. (Previously Presented) The method of claim 3 wherein the method further comprises generating a channel estimate from long training symbols of the OFDM packet, and

wherein weighting includes applying weights to pilot subcarriers, the weights being complex conjugates of the fading gains of the pilot subcarriers, the fading gains being determined from the channel estimate.

10. (Original) The method of claim 5 wherein recursively filtering comprises:

subtracting a predicted observation vector from the observation vector to generate a residual vector;

multiplying the residual vector by a gain matrix to generate a residual gain vector;

adding the residual gain vector to a linear prediction vector to generate an estimate vector; and

extracting a frequency offset estimate and the phase compensation estimate for the data symbol from the estimate vector.

11. (Original) The method of claim 10 wherein the estimate vector is a multi-dimensional vector comprised of the frequency offset estimate and the phase compensation estimate, and wherein the phase compensation estimate is applied to a data symbol subsequent to performing a Fast Fourier Transform (FFT) on the data symbol.

12. (Previously Presented) The method of claim 10 wherein the estimate vector is a multi-dimensional vector comprised of a frequency offset estimate and the phase compensation estimate, and

wherein the method further comprises rotating a phase of a serial symbol stream comprising the data symbol prior to performing a Fast Fourier Transform on the data symbol based at least on the frequency offset estimate.

13. (Currently Amended) The method of claim 2 further comprising:

rotating a phase of a serial symbol stream comprising the data symbol prior to performing a Fast Fourier Transform on the data symbol, the rotating based at least on the frequency offset estimate;

performing a Fast Fourier Transform (FFT) on the plurality of parallel groups of time-domain samples that represent the data symbol to generate frequency domain symbol modulated subcarriers prior to applying the phase compensation estimate;

separating the pilot subcarriers from data subcarriers of the frequency domain symbol modulated subcarriers for use in generating the phase compensation estimate; and

demapping the data symbol after channel equalization and after applying the phase compensation estimate to generate at least a portion of a decoded bit stream.

14. (Original) The method of claim 2 wherein the pilot subcarriers are comprised of modulated pilot symbols having known training values and modulated on a predetermined portion of subcarriers of the plurality.

15. (Currently Amended) A phase tracking unit comprising:

an observation vector former to weight and combine pilot subcarriers of a data symbol of an orthogonal frequency division multiplexed (OFDM) packet to generate an observation vector; and

a recursive filter to recursively filter the observation vector to generate a phase compensation estimate for the data symbol, the recursive filter using a channel estimate, an additive noise power estimate, a signal to noise ratio (SNR), and a phase noise value estimate to perform the recursive filtering,

wherein the phase compensation estimate is applied to channel equalized subcarriers of the data symbol in the frequency domain after channel equalization and performance of a Fourier transform, and

wherein the observation vector former weights the pilot subcarriers based on fading gains to help maximize a signal to noise ratio (SNR) of the observation vector.

16. (Previously Presented) The phase tracking unit of claim 15 wherein the observation vector former includes a weighting element to weight the pilot subcarriers based on the fading gains for the pilot subcarriers.

17. (Original) The phase tracking unit of claim 16 wherein the weighting element receives the channel estimate generated from long training symbols of the OFDM packet, and wherein the weighting element applies weights to pilot subcarriers, the weights being complex conjugates of the fading gains, the fading gains being determined from the channel estimate.

18. (Original) The phase tracking unit of claim 15 wherein the recursive filter performs recursive filtering to generate phase compensation estimates for a present data symbol of the OFDM packet.

19. (Original) The phase tracking unit of claim 18 wherein the observation vector former further combines the pilot subcarriers of the present data symbol to generate an observation vector for the present data symbol; and

the recursive filter recursively filters the observation vector for the present data symbol to generate the phase compensation estimate for the present data symbol.

20. (Original) The phase tracking unit of claim 19 wherein the recursive filter subtracts a predicted observation vector from the observation vector to generate a residual vector, multiplies the residual vector by a gain matrix to generate a residual gain vector, adds the residual gain vector to a linear prediction vector to generate an estimate vector and extracts the phase compensation estimate for the data symbol from the estimate vector.

21. (Original) The phase tracking unit of claim 20 wherein the estimate vector is a multi-dimensional vector comprised of frequency offset and the phase compensation estimates, and

wherein extracting includes extracting the phase compensation estimate for a data symbol from the estimate vector, and

wherein the phase compensator applies the phase compensation estimate to the data symbol subsequent to performing a Fast Fourier Transform on the data symbol.

22. (Currently Amended) An orthogonal frequency division multiplexed (OFDM) receiver system comprising:

a dipole antenna to receive signals that include an OFDM packet;

an RF receive unit to convert the OFDM packet to a stream of symbols;

a data symbol-processing unit to perform a Fast Fourier Transform (FFT) on the stream of symbols to generate a decoded bit stream;

<u>a channel equalizer to perform channel equalization on subcarriers provided by the FFT;</u>

a phase tracking unit to generate phase compensation estimates based on channel conditions; and

a phase compensator to apply the phase compensation estimate to <u>channel equalized</u> subcarriers of a data symbol of the OFDM packet in the frequency domain after performing the FFT<u>,</u>

<u>wherein the phase tracking unit generates the phase compensation estimate by recursively filtering an observation vector formed by weighted pilot subcarriers, and</u>

<u>wherein the pilot subcarriers are weighted to help maximize a signal to noise ratio (SNR) of the observation vector based on fading gains</u>.

23. (Currently Amended) The system of claim 22 wherein the phase compensator includes:

an observation vector former to combine <u>and weight the</u> pilot subcarriers to generate [[an]] <u>the</u> observation vector; and

a recursive filter to recursively filter the observation vector to generate a frequency offset and the phase compensation estimates for phase compensating the data symbol.

24. (Currently Amended) The system of claim 23 wherein the observation vector former includes a weighting element to weight the pilot subcarriers based on <u>the</u> fading gains for the

pilot subcarriers prior to combining the weighted subcarriers in generating the observation vector.

25. (Currently Amended) The system of claim 24 further comprising a long training symbol processing element to generate a channel estimate from a long training symbol of the OFDM packet, and wherein the weighting element applies weights to the pilot subcarriers, the weights being complex conjugates of the fading gains of the pilot subcarriers, the fading gains being determined from the channel estimate.

26. (Original) The system of claim 23 wherein the recursive filter is an extended Kalman filter and uses a channel estimate, an additive noise power estimate, a signal to noise ratio (SNR) estimate, a priori information about a dynamic mode of phase, and a phase noise power value from a phase noise spectrum of transceiver oscillators to generate the phase compensation estimate.

27. (Original) The system of claim 26 further comprising:

a long training symbol processing element to generate the channel estimate from a long training symbol of the OFDM packet; and

a short training symbol processing element to generate the additive noise power estimate and the SNR estimate from short training symbols of the OFDM packet,

and wherein the channel estimate, the additive noise power estimate, the SNR estimate and the phase noise power value are used for subsequent data symbols of the OFDM packet.

28. (Currently Amended) A computer-readable medium that stores instructions for execution by one or more processors to perform operations that ~~An article comprising a storage medium having stored thereon instructions, that when executed by a computing platform,~~ result in:

generating a phase compensation estimate by recursively filtering an observation vector formed by weighted pilot subcarriers of ~~based on channel conditions for~~ a data symbol of an

orthogonal frequency division multiplexed (OFDM) packet ~~from pilot subcarriers within the data symbol~~; and

applying the phase compensation estimate to channel equalized subcarriers of the data symbol in the frequency domain after performance of a Fourier transform on the data symbol,

wherein the pilot subcarriers are weighted to help maximize a signal to noise ratio (SNR) of the observation vector based on fading gains.

29. (Currently Amended) The computer-readable medium ~~article~~ of claim 28 wherein the instructions, when executed by the one or more processors, ~~computing platform,~~ further result in repeating generating and applying for subsequent data symbols of the OFDM packet, and wherein the data symbol is comprised of a plurality of symbol modulated subcarriers~~, at least some of the symbol-modulated subcarriers of the plurality being the pilot subcarriers~~.

30. (Currently Amended) The computer-readable medium ~~article~~ of claim 29 wherein generating the phase compensation estimate results in:

weighting the pilot subcarriers based on the fading gains for the pilot subcarriers;

combining the weighted pilot subcarriers in an observation vector former to generate the ~~an~~ observation vector; and

recursively filtering the observation vector to generate the phase compensation estimate,

and wherein repeating generating the phase compensation estimate results in:

combining the pilot subcarriers of a present data symbol to generate an observation vector for the present data symbol; and

performing recursive filtering on the observation vector for the present data symbol using the channel estimate to generate the phase compensation estimate for the present data symbol.